

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>RPGX001WO</b>	<b>FOR FURTHER ACTION</b>		See Form PCT/PEA/416																								
International application No. <b>PCT/JP2004/008407</b>	International filing date ( <i>day/month/year</i> ) <b>09.06.2004</b>	Priority date ( <i>day/month/year</i> ) <b>19.06.2003</b>																									
International Patent Classification (IPC) or national classification and IPC <b>G21G4/04</b>																											
Applicant <b>mitsugashira, Hiroaki</b>																											
<ol style="list-style-type: none"> <li>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</li> <li>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</li> <li>3. This report is also accompanied by ANNEXES, comprising:               <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of    sheets, as follows:                   <ul style="list-style-type: none"> <li><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> </li> <li>b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (indicate type and number of electronic carrier(s))    , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</li> </ol> </li> </ol>																											
<ol style="list-style-type: none"> <li>4. This report contains indications relating to the following items:               <table style="width: 100%; border: none;"> <tr> <td style="width: 10%;"><input checked="" type="checkbox"/></td> <td style="width: 15%;">Box No. I</td> <td>Basis of the opinion</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> </li> </ol>				<input checked="" type="checkbox"/>	Box No. I	Basis of the opinion	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand  <b>06.04.2005</b>		Date of completion of this report  <b>14.11.2005</b>																									
Name and mailing address of the international preliminary examining authority:  <div style="display: flex; align-items: center;"> <div>             European Patent Office - P.B. 5818 Patentlaan 2              NL-2280 HV Rijswijk - Pays Bas              Tel. +31 70 340 - 2040 Tx: 31 651 epo nl              Fax: +31 70 340 - 3016           </div> </div>		Authorized Officer  <b>Capostagno, E</b>  Telephone No. +31 70 340-3221																									



INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITYInternational application No.  
PCT/JP2004/008407**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
  - ☐ publication of the international application (under Rule 12.4)
  - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

**Description, Pages**

1-14 as originally filed

**Claims, Numbers**

1-14 as originally filed

**Drawings, Sheets**

1/2-2/2 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
  - ☐ the claims, Nos.
  - ☐ the drawings, sheets/figs
  - ☐ the sequence listing (*specify*):
  - ☐ any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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1. Statement

Novelty (N)	Yes: Claims	1-11
	No: Claims	12-14
Inventive step (IS)	Yes: Claims	1-11
	No: Claims	12-14
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations (Rule 70.7):

**see separate sheet**

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement.

1. Reference is made to the following documents:

D1: XP8035233

D2: GB-A-636338

2. Claims 12-14

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 12-14 is not new in the sense of Article 33(2) PCT, for the reasons in the following:

2.2 The document D1 discloses (see page 208, left-hand column, par. 2-3 and fig. 2,3): a  $^{210}\text{Pb}$  collector which uses radon collection for collecting  $^{210}\text{Pb}$ - $^{210}\text{Po}$ , which comprises a  $^{222}\text{Rn}$  source which includes a substance including uranium radioactive nuclides; a moisture trap for collecting  $^{222}\text{Rn}$  gas generated by the  $^{222}\text{Rn}$  source along with a carrier gas and sending pure radon gas to a cold trap; and a  $^{222}\text{Rn}$  collector trap for liquefying the  $^{222}\text{Rn}$  gas by cooling to a temperature below the boiling point of  $^{222}\text{Rn}$  and then generating  $^{210}\text{Pb}$  and  $^{210}\text{Po}$ .

2.3 In his reply letter of April 4, 2005 (received on April 6, 2005), the Applicant recognizes that fig.3 of document D1 is the same as figure 1 of the present application (representing the claimed collector), but he states that the driving conditions of the collector are more concretely disclosed in the description of the present application.

The examining division is nevertheless of the opinion that the present claim 12 does not contain any feature, even if disclosed in the description, that differentiates the subject-matter of claim 12 from the collector disclosed by D1.

Again, claim 12 mentions a "moisture trap" without any exclusion concerning the trap agent. As a consequence, the presence of silicon oil as trap agent in the device disclosed by D1 is unessential vis-à-vis of claim 12.

The subject-matter of claim 12 is therefore not new (Art.33.2 PCT).

- 2.4 The same reasoning of above par. 2.3 applies, *mutatis mutandis*, to the subject-matter of dependent claims 13-14:

D1 discloses an assembly showing all the additional features of dependent claims 13-14, which therefore are not new.

3. Claims 1-11

- 3.1 The subject-matter of claims 1-11 is new and inventive (Art.33.2 and Art.33.3 PCT). The document D2 (see page 2, lines 86-119), which is considered as the closest prior art, discloses:

a method for making thin radioactive alpha sources, which consists of homogeneously mixing finely-divided radioactive (such as radium) powders with metal (such as gold) powders, sintering and compacting by rolling, sandwiching the mass between layers of protective metal, and cold working to the desired size.

The proportions of radioactive powder and metal powder depend upon how intense a degree of radioactivity is desired in a given final volume.

The subject-matter of claim 1 differs from this known method in that a pure  $^{210}\text{Pb}$ - $^{210}\text{Po}$  hydroxide precipitate is obtained by chemical treatment of a precursor  $^{222}\text{Rn}$  source. The precipitate is then dissolved to obtain a final  $^{210}\text{Pb}$ - $^{210}\text{Po}$  thin film.

- 3.2 The problem to be solved is how to manufacture an alpha source without the necessity of controlling the density of the alpha emitter, sandwiched between metal cover members or mixed in a metal matrix, which requires special dedicated apparatuses, for obtaining the desired activity in a given volume (see description, page 2, lines 7-18).

Independent claim 1, which relates to a method for producing a sealed  $^{210}\text{Pb}$ - $^{210}\text{Po}$  alpha source by using the Pb/Po powders of claim 12, discloses the feature of precipitating the hydroxides of the Pb/Po collected in the collector of claim 12, collecting the precipitates using a polycarbonate filter, dissolving the hydroxide precipitates to form a Pb/Po radioactive thin film and sealing the thin film for protection. This solution is neither known from, nor rendered obvious by the available prior art.

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(SEPARATE SHEET)**

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- 3.3 Claims 2-11 are dependent on claim 1 and, as such, they also meet the requirements of the PCT with respect to novelty and inventive step.